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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,141

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Josef Linska

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EXAMINER

HORNING, JOEL G

ART UNIT

PAPER NUMBER

1792

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,141	Applicant(s) LINSKA ET AL.	
	Examiner JOEL G. HORNING	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-33 is/are pending in the application.
- 4a) Of the above claim(s) 28-30 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-27, 31 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>01-10-2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's election without traverse of the invention of group I, claims 16-27 and 31-32, in the reply filed on 12-07-2009 is acknowledged. Claims 28-30 and 33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 12-07-2009.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claim 22** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "low-viscosity" in claim 22 is a relative term which renders the claim indefinite. The term "low-viscosity" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purposes of examination, it will be assumed that the viscosity produced by the addition of turpentine to the paste is sufficiently low for the use of the paste, and so is a "low-viscosity."

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claim 16-18, 23 and 25-27** are rejected under 35 U.S.C. 102(b) as being anticipated by Sangeeta et al (US 20020094445).

Sangeeta et al teaches a process for applying corrosion and oxidation protection coatings to the nickel based superalloy turbine engine blades [0002], from this teaching of coating the superalloy surface of turbine engine blades, coating all parts of the superalloy turbine engine blade is clearly envisaged, including parts of the blade that are "not exposed to flow," like the damper pocket area of the blade **(claim 27)**. Sangeeta et al teaches forming this coating by: preparing and depositing a paste of a metal, such as platinum **(claim 18)**, to the blade; drying and heat treating the blade so coated; applying an aluminizing slurry layer onto the coated metal; and heat treating the coated blade in order to aluminize the surface [0008-0012]. The metal of the platinum metal paste, can be selected to be (exclusively) platinum or palladium [0021] and this paste can also include a binder [0024]. Sangeeta et al further teaches depositing several layers of the aluminizing paste on top of each other in several applications [0035-0036], thus the final layer of the aluminizing paste is a "covering powder" which completely covers the previously deposited aluminizing slurry. The slurry comprising aluminum powder **(claim 16)** [0034]. (As an aside, the examiner would like to note that the only disclosed "covering powder" in applicant's specification, found on page 5, is alumina mixed with an activator, which Sangeeta et al recognizes as an alternate source of aluminum vapor for the aluminizing process [0042], so applicant appears to be doing the same thing with their "covering powder" as Sangeeta et al.)

4. Regarding **claim 17**, Sangeeta et al teaches diluting the paste, prior to application, in order to adjust the viscosity of the paste [0023].
5. Regarding **claim 23**, Sangeeta et al teaches applying the paste by spraying [0027].
6. Regarding **claim 25**, the purpose of the thermal treatments is to cause thermal diffusion of the metals in the paste as well as the metals of the substrate itself so they can alloy [0012], by the mechanism of diffusion, some of the metals present in the paste will necessarily diffuse into the blade.
7. Regarding **claim 26**, Sangeeta et al teaches repeating the deposition of the metal paste in multiple spray passes to build up the desired coating thickness [0028] before the aluminizing treatment is performed [0029]. It is necessary that with each pass that the paste of each pass be prepared for deposition by passing it through the spray nozzle.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 19, 20 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sangeeta et al (US 2002/0094445) as applied to claim 16 above.
9. Regarding **claim 19**, Sangeeta et al teaches that in order to form the platinum metal paste, it is only required that the solid metal must be mixed with a liquid carrier, which can be terpineol [0022]. However, Sangeeta et al does not have an example

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of the specific combination of only platinum metal paste with only terpineol as the binder.

However, it would have been obvious to a person of ordinary skill in the art at the time of invention to use a platinum metal paste that uses only terpineol as the carrier/binder, since they are taught to be appropriate materials to use as the metal and as the carrier and would produce predictable results.

10. Regarding **claim 20**, Sangeeta et al teaches both platinum and palladium to be appropriate metals for use in the paste [0021], but does not specifically teach using a metal paste comprising both platinum and palladium.

However, it would have been obvious to a person of ordinary skill in the art at the time of invention to use both platinum and palladium as the metals of the paste (to replace some of the platinum with palladium), since they were both known to be suitable replacements for each other in the paste and would produce predictable results.

11. Regarding independent **claim 31**, Sangeeta et al further teaches that during turbine engine use, localized damage will occur on the metal aluminide coating of the turbine engine blades. The coating on the entire blade can be replaced, but it is more efficient to repair only the damaged portion of the coating while leaving the rest intact [0004-0006]. It further teaches using its process to selectively repair damaged metal-aluminide coated areas of the substrate, by selectively applying the coating pastes to the damaged areas, while other areas are not treated [0014-0018].

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention that, eventually damage will occur to the metal aluminide coating of the damper pocket area of a turbine blade, where the coating is not exposed to flow, and when that damage occurs, to selectively repair the damaged area by applying the coating pastes only to that area of the damper pocket area of the turbine blade, since it is more efficient than replacing the coating on the entire blade.

Additionally, because of the great costs involved in avoiding the effects of gravity (e.g. costs of achieving escape velocity from the gravitational field of Earth), it is notoriously well known to perform coating processes under gravity's influence, and in so doing to use gravity in the coating process.

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to perform the aluminizing and coating steps using gravity in order to avoid the high costs of not using gravity.

12. **Claims 21 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sangeeta et al (US 2002/0094445), as previously applied to claim 20, in view of Okamoto (US 6103146).

13. Regarding **claim 21**, Sangeeta et al teaches that the metal paste includes: the metal (for claim 20, this is palladium and platinum) [0021]; a liquid carrier composition, such as terpenes and terpene-derivatives, specifically, terpineol [0022]; and can include resins [0024].

Thus, it would have been obvious to a person of ordinary skill in the art to select a paste composed of platinum and palladium metals, terpineol and other

terpenes as a liquid carrier and a resin as a binder or other additive in the process of Sangeeta et al since these were taught to be suitable components of such a metal paste.

Although turpentine is composed of terpenes, Sangeeta et al does not specially teach using turpentine.

However, Okamoto is also directed towards metal pastes suitable for depositing and heat treating on substrates in order to form metal coatings (abstract). It teaches using platinum and palladium metal powders in the pastes (col 2, lines 60-65). It further teaches that turpentine and terpeneol are suitable terpenes for use as the liquid carrier of such metal pastes, and can be used in conjunction with resins in order to form the desired paste (col 3, lines 10-20).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to use turpentine as a specific terpene for use as a liquid carrier for the metal paste in the process of Sangeeta et al, since it was known to be a suitable terpene for use in such metal pastes for the deposition of metal layers and is compatible with palladium and platinum. Such a person would do so with the expectation of predictable results.

Furthermore, Sangeeta et al teaches that the specific liquid carrier composition is within the level of a person of ordinary skill in the art in order to affect the solubility of the metal, the evaporation rate, adhesion onto the substrate, environmental/safety concerns, etc [0022]. The fraction of the paste that is a liquid carrier is selected in order to control the viscosity of the resulting paste [0023]. The

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amount of resin varies considerably, but is usually between 0.1 to about 10% by weight, overlapping with applicant's claimed ranges [0024]. Thus the general conditions of the claim are disclosed in the prior art.

MPEP 2144.05 (II) states: "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.'" (**claim 21**).

14. Regarding **claim 22**, turpentine oil is turpentine, and it is used to produce a paste of a low enough viscosity to be considered "low-viscosity."

15. **Claim 24** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sangeeta et al (US 2002/0094445), as previously applied to claim 16, in view of Olson et al (US 6045863).

Sangeeta et al teaches that when repairing damaged coatings, as a first step, the damaged areas should be removed and cleaned by using "conventional procedures," before depositing the pastes that will form the repaired layer [0048-0051]. Sangeeta et al does not specifically teach that grit blasting is such a conventional method for cleaning the damaged areas.

However, Olson et al is also directed towards depositing aluminide coatings on selected portions of gas turbine engine components (col 3, lines 24-36). It teaches that before depositing the aluminide precursor on the local area, the area

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should be cleaned. Aluminum oxide grit blasting is taught to be a conventional method to clean such surfaces (col 3, lines 47-50).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to use grit blasting as the cleaning step performed on the turbine blade prior to depositing the coating, since it was known to be a conventional method of cleaning such surfaces and would produce predictable results (**claim 24**).

16. **Claim 32** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sangeeta et al (US 2002/0094445), as previously applied to claim 31 above, in view of Baldi et al (US 4528215).

As discussed previously for claim 31 it is obvious to perform the process of Sangeeta et al on the damper pocket area of a turbine blade. However, Sangeeta et al does not teach how the blade is held during the coating and the diffusion heat treatment process that follows it.

However, Baldi et al is also directed towards an aluminizing treatment of a turbine blade (abstract) by using a thermal diffusion process (col 3, lines 59-62). It teaches a turbine fan blade holder suitable for performing the diffusion heat treatment process in which the blade footing (root) **14** is facing upwards in the device (figure 1, col 8, lines 17-20). Thus, the blade footing facing upwards was a known orientation in which to hold turbine blades in a device during aluminization thermal treatment processes.

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to use a device where the blade footing is facing upwards during

deposition and thermal treatment of the fan blade since such devices were available as turbine blade holders for aluminization and known to the art to be suitable and would produce predictable results.

Conclusion

No current claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL G. HORNING whose telephone number is (571) 270-5357. The examiner can normally be reached on M-F 9-5pm with alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael B. Cleveland can be reached on (571)272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 1792

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